

# 75 Classifying Animals



**T**here are many types of introduced species—just think about the differences between starlings and purple loosestrife! Most of the well-known cases belong to the plant or animal kingdom. While you may recognize kudzu, loosestrife, and hydrilla as plants, you may not have realized that all of the other introduced species discussed so far, including zebra mussels and tiger mosquitoes, are part of the animal kingdom. In fact, there are over one million known animal species in the world today, with many more being discovered every year. With such a large diversity of species, how do you know if the animal you are studying is similar to one another scientist is studying?

Scientists use classification systems to help them describe similar organisms. Several systems classify organisms in various ways. The five-kingdom classification scheme was based on observations of the physical structures and other characteristics of species. Then new evidence that bacteria can be divided into two groups—bacteria and archaea (are-KAY-uh)—led to a six-kingdom system. Although archaea are made up of a single cell and look like bacteria, they are genetically distinct from bacteria.


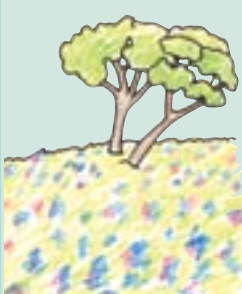





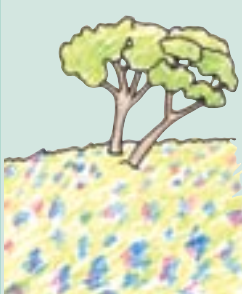


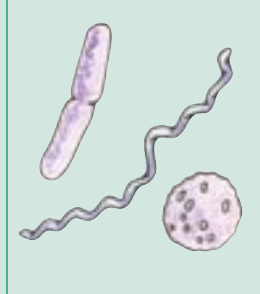
To better classify living organisms according to their genetic makeup, in 1990, scientists proposed the three-domain system. The three-domain system divides all living things into three groups—archaea, bacteria, and eukaryote (you-CARE-ee-ott) domains. The Eukaryote Domain is made up of all living things that have cells with a nucleus. It includes animals, plants, fungi, and protists. Because archaea and bacteria do not have a nucleus they are considered to be prokaryotes (pro-CARE-ee-otts).




ANIMAL CELL



AMOEBA CELL

Classification Systems: The Three-Domain Classification System					
Eukaryotes				Prokaryotes	
Eukarya (organisms with cells that have a nucleus)				Bacteria	Archaea
					
The Five-Kingdom Classification System					
Animals	Plants	Fungi	Protists	Bacteria (Monera)	
					

Both the five- and six-kingdom classification systems grouped organisms by their physical characteristics, while the three-domain system groups organisms by their genetic similarity. These systems help scientists make sense of the diversity of life. They allow scientists to compare an organism, such as a zebra mussel, to other organisms with similar characteristics. In this activity you will focus on organisms found in the animal kingdom.

**CHALLENGE**  What are some similarities and differences among animals?

### MATERIALS



For each group of four students  
1 Set of 18 Animal Cards

## PROCEDURE

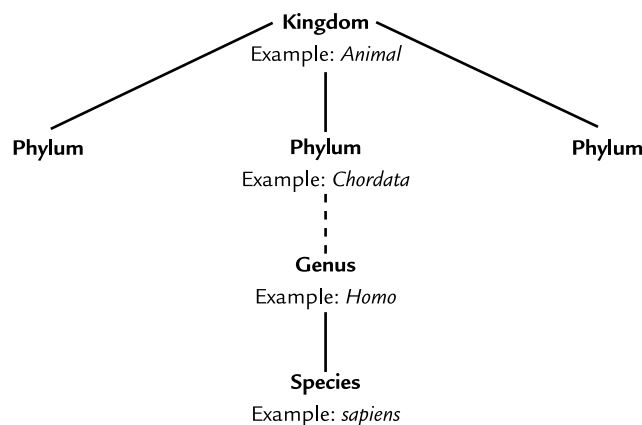
### Part A: Exploring the Animal Kingdom

1. Spread your Animal Cards out on a table.
2. Look at each of the Animal Cards, noting similarities and differences among the animals.
3. Read the information on each card. This information represents what you might discover if you observed the animals more closely and were able to dissect a specimen.
4. With your group of four, classify the Animal Cards into four to eight groups. Work together to agree on a classification system.
  - Listen to and consider explanations and ideas of other members of your group.
  - If you disagree with your group members about how to classify an animal, explain why you disagree.
5. In your science notebook write down the groups that you created.
6. Share your categories with another group of students. Explain why you classified the animals the way you did. Discuss how your group's categories were similar to or different from those of the other student group.

### Part B: A Biologist's Perspective

7. Get a set of Phylum (FIE-lum) Cards from your teacher. (The plural of phylum is phyla.) Rearrange your classification of animals if necessary, and record your changes in your science notebook.
8. Biologists use information such as that found on the Phylum Cards to classify animals. Each phylum contains similar species. There are about 35 animal phyla. Your teacher will share with you how biologists group the animals on your cards into six of these phyla. Humans are grouped in the phylum Chordata, as shown below.

*Humans are members of one of many phyla of animals.*



9. Adjust your animal groups so they look like the phyla used by biologists today. Then complete Analysis Questions 1–3.

## ANALYSIS



1. How did your categories change when you followed the biologists' system of phyla? Did your number of categories increase, decrease, or stay the same?



2. Look carefully at how biologists group these animals into phyla. What types of characteristics are used to group animals into phyla?
3. Animals without backbones are called invertebrates. How many invertebrate phyla do the animals on your Animal Cards represent? List these phyla.
4. **Reflection:** What characteristics were most important to you when you grouped the Animal Cards? How are these characteristics different from the ones that biologists use to classify? What do you now think is the best way to group animals? Explain.